

PATENT
Attorney Docket No. 401188

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

MISUMI et al.

Application No.: Unassigned

Art Unit: Unassigned

Filed: May 4, 2001

Examiner: Unassigned

For: SEALED
SEMICONDUCTOR
DEVICE AND LEAD
FRAME USED FOR
THE SAME

CLAIMS PENDING AFTER PRELIMINARY AMENDMENT

1. A sealed semiconductor device comprising:
semiconductor chip portions;
a lead frame portion including internal lead portions extending on surfaces of the semiconductor chip portions; and
holding members holding said semiconductor chip portions and said internal lead portions at intervals and fixed to only one of said semiconductor chip portions and said internal lead portions.
2. The sealed semiconductor device according to claim 1, wherein said holding members include a tape member bonded and fixed to said internal lead portion.
3. The sealed semiconductor device according to claim 2, wherein said tape member is located in areas peripheral to said semiconductor chip portions.
4. The sealed semiconductor device according to claim 1, wherein said holding members include protrusions protruding toward said semiconductor chip portions and provided in said internal lead portions.

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5. The sealed semiconductor device according to claim 4, wherein said protrusions are bends in said internal lead portions.

6. The sealed semiconductor device according to claim 5, wherein crest portions of the bends of said internal leads contact said semiconductor chip portions.

7. The sealed semiconductor device according to claim 4, wherein said internal lead portions include an original internal lead electrically connected with said semiconductor chip portions and dummy internal leads, and said protrusions are part of said dummy internal lead portions.

8. The sealed semiconductor device according to claim 7, wherein said semiconductor chip portions are almost rectangular, and
said original internal lead is set toward a pad portion formed nearby centers of said rectangular semiconductor chip portions from a pair of faced sides of said semiconductor chip portions,

said dummy internal leads are arranged toward the semiconductor chip portions from the other pair of sides facing the direction almost orthogonal to said pair of faced sides.

9. The sealed semiconductor device according to claim 4, wherein said protrusions contact areas peripheral to said semiconductor chip portions.

10. The sealed semiconductor device according to claim 9, wherein
said semiconductor chip portions include a semiconductor chip body and a die pad for mounting said semiconductor chip body, and
said protrusions contact said die pad.

11. The sealed semiconductor device according to claim 1, wherein
said semiconductor chip portions include a semiconductor chip body and a die pad for mounting said semiconductor chip body, and

said holding members include protrusions fixed to said die pad and protruding toward said internal leads.

12. The sealed semiconductor device according to claim 1, wherein said holding members are located opposite an injection port of a mold when sealing said semiconductor chip portions and said internal lead portions with a resin.

13. A lead frame for a sealed semiconductor device obtained by sealing semiconductor chip portions with a resin, comprising:

an internal lead portion located toward a pad portion located nearly centrally on said semiconductor chip portions and electrically connected with said pad portion; and holding lead portions for holding said semiconductor chip portions and said internal lead at intervals by contacting said semiconductor chip portions.

14. The lead frame according to claim 13, wherein said holding lead portions include said internal lead portion, and including a tape member bonded and fixed to said holding lead portions at positions corresponding to areas peripheral to said semiconductor chip portions.

15. The lead frame according to claim 13, wherein said holding lead portions are dummy internal lead portions.

16. The lead frame according to claim 15, wherein said internal lead portion is set toward said pad portion of almost-rectangular semiconductor chip portions from a pair of faced sides of the almost-rectangular semiconductor chip portions, and

said holding lead portions are arranged toward said semiconductor chip portions from the other pair of sides facing the direction almost orthogonal to said pair of faced sides.